



## AMENDMENTS

### IN THE SPECIFICATION:

Please amend the paragraph beginning with "Specifically" on page 3 as follows:

Specifically, it is an object of the present invention to provide a furnace enclosed in a furnace housing to enable a substantially vertical rotational movement of objects within the furnace housing to carry out different kinds of heat processes and cooling processes in a single processing cycle. Special mechanical designs are implemented to assure the objects for heating are maintained at a fixed orientation without slipping or position shifts. The losses of heat applied for performing the heat processes are significantly reduced because the loading and unloading processes can be carried out only once at the same location. Efficient utilization of energy is enhanced, as the heating zone is located on the top portions of the furnace where the hot air generated by the properly arranged heater around the rotating cycle path ~~[[and]]~~ migrates through natural convection to the top of the chamber with few electric fans. This invention thus takes advantage of the natural convection ~~convection~~ to reduce the energy consumption compared to the conventional furnace applying more electric fans as means of force convection.

Please amend the paragraph beginning with "Figs. 3 and 4" on page 9 as follows:

Figs. 3 and 4 are a perspective view and a front view of another preferred embodiment of a furnace 300 disclosed in this invention wherein a furnace is implemented with ~~[[a]]~~ vertically rotating rings 310 and a fixed ring 320. This pair of vertically rotating rings 310 is driven by a motor 330 for carrying the trays 340 to rotate inside a furnace housing enclosing the pair of vertically rotating

rings. As shown in Figs. 3 and 4, this pair of fixed rings 320 separated by a desired distance provides open space inside the furnace to accommodate the pair of rotating rings ~~[[ring]]~~ 310 whose ~~[[which]]~~ central portion is attached to rotary ~~rotatory~~ driver mechanism powered by motor 330. Furthermore, the axis line constituted by two fixed ring geometric center are parallel and vertically below the axis line constituted by two rotating ring geometric center. The pair of fixed rings 320 keeps the trays 340 in a vertical position as that clearly shown in Fig. 4 when the trays are rotated from the first quadrant through the second, third and fourth quadrants then returns to the first quadrant. Alternately, the trays may also be rotated along a clockwise direction through the fourth, third, second and return to the original position. A motor 330 with a gearbox is engaged to one ring or both rings to drive the pair of rings 310 to rotate while the pairs of rings 320 are kept stationary. A plurality of trays 340 include ~~that includes~~ a horizontal bottom plate 340-B and side panels 340-S with top apex 340-A having two hanging points attached and hung on the rings 310. The bottom plate 340-B is engaged and restrained along the pair ring 320 to assure that the horizontal bottom plate is continuously maintained at a horizontal plane as the pairs of rings 310 carry the trays 340 along a rotational trajectory. The trays 340 are engaged between the pairs of rotational rings 310 and the stationary rings 320 employing a "four bar linkage" mechanism such that the bottom plate 340-B can always orient along a horizontal plane to carry the objects to undergo the thermal cycles of heating up and cooling down processes. Special arrangements are made between the rings 310 to rings 320 on each side with an offset at a defined space so a drive bar can be used to connect with both units without any interference during cycle rotation. The furnace 300 further includes a heat exchanger 350 for controlling the temperature of the furnace. A flux foam pot 360 is disposed on the bottom for carrying out flux coating on the bottom side of a PC board. A wave-soldering unit 365 is placed on the top portion of the furnace.